

DEP15217 – Clarksburg (Lyons) LS Design Expression of Interest



Prepared for:

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, West Virginia 25305-0130

Prepared by:

Tetra Tech
Foster Plaza 7
661 Andersen Drive
Pittsburgh, Pennsylvania 15220

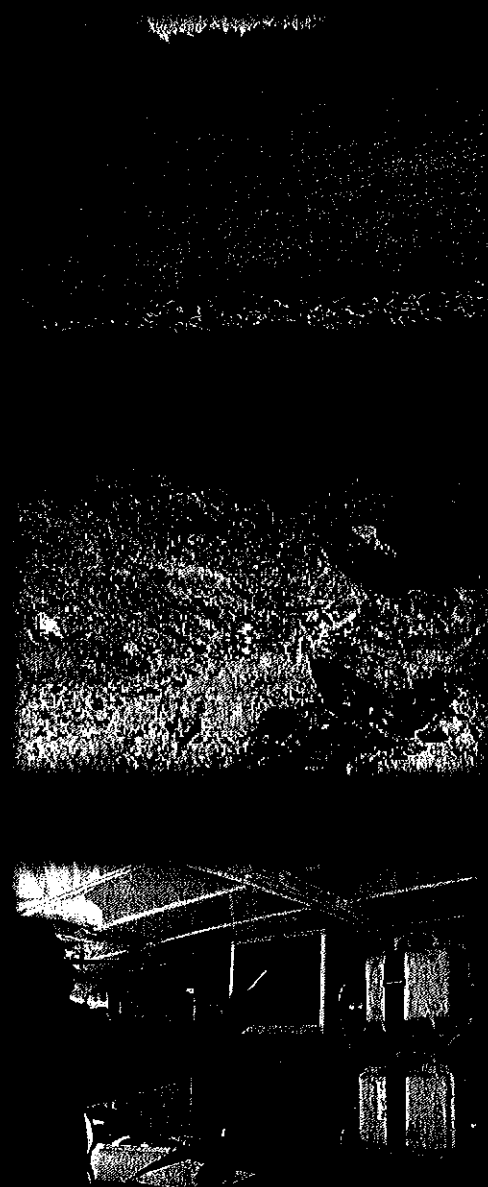
Point of Contact & Telephone Number:

Mr. Thomas Gray, PE
T: 412.921.8794
F: 412.921.4040
Email: tom.gray@tetrattech.com

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WV PURCHASING
DIVISION





TETRA TECH

TABLE OF CONTENTS

TAB A.....	Cover Letter
TAB B.....	Attachment B
TAB C.....	Attachment C
TAB D.....	Personnel
TAB E.....	Project Experience



TETRA TECH

November 30, 2010

Mr. Chuck Bowman
State of West Virginia
Purchasing Division
2019 Washington Street, East
P.O. Box 50130
Charleston, West Virginia 25305-0130

Subject: RFQ #DEP15217 – Clarksburg (Lyons) LS Design

Dear Mr. Bowman:

Tetra Tech is pleased to submit our Expression of Interest to perform design services in reply to RFQ #DEP15217 for the State of West Virginia. As outlined in our Expression of Interest, Tetra Tech, our project team, and its personnel have completed work on **hundreds of mine reclamation projects**. These projects have included services that will be needed for this project such as landslide design, revegetation, and surveying.

This project will be managed out of Tetra Tech's Pittsburgh office and this location has **four (4) available abandoned mine land teams** (consisting of a mining/civil engineer, CAD person, and support personnel) and **four (4) West Virginia registered Professional Engineers** to work on projects. Our firm also has an office location in Charleston, West Virginia, which can provide local support if needed. That office's largest client is the West Virginia Department of Environmental Protection. Tetra Tech welcomes the opportunity to perform work in West Virginia as we continue to add staff in West Virginia. Tetra Tech is joined on this project by:

- **TRIAD Engineering (TRIAD)**, which will provide surveying and drilling (if required) services. Our firms have previously worked together. The Triad office for this project is located in Morgantown, WV.
- **Richard Gray, PG**, who will provide supplementary landslide expertise. Mr. Gray has participated in **more than 25 landslide field studies** in locations across the U.S. including West Virginia, Maryland, Virginia, and Pennsylvania.
- **Keddal Aerial Mapping (Keddal)**, which will provide aerial mapping services as needed. Aerial photography is currently available for the years 2000 and 2008.

Our experienced team is led by Mr. Thomas Gray, PE. Mr. Gray is a licensed Professional Engineer in five states including West Virginia and has extensive mining and landslide experience, having worked on over **100 mining projects** throughout his career. Another Tetra Tech employee, Roger Blair, PE, has completed more than 20 landslide projects in Virginia and Kentucky and will serve as a Project Advisor. Our proposed key personnel have over **200 years** of combined experience relevant to this project.

As requested by the RFP we have provided one original submittal, one copy, and one copy on CD-ROM. We appreciate this opportunity to provide this proposal, and look forward to answering any questions you may have. If you should require any additional information, please contact us at (412) 921-7090.

Very truly yours,

Mr. Thomas Gray, PE
Energy and Natural Resources Department Manager

Mr. Mark Speranza, PE
Pittsburgh Office Manager

Enclosures

Attachment B

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

AML CONSULTANT QUALIFICATION QUESTIONNAIRE

Attachment "B"

PROJECT NAME Clarksburg (Lyons) LS Design		DATE (DAY, MONTH, YEAR) 30, November, 2010		FEIN 95-4660169	
1. FIRM NAME Tetra Tech NUS, Inc.		2. HOME OFFICE BUSINESS ADDRESS Foster Plaza 7, 661 Andersen Drive Pittsburgh, Pennsylvania		3. FORMER FIRM NAME NUS Corporation NUS Environmental Corporation Brown & Root Environmental	
4. HOME OFFICE TELEPHONE (412) 921-7090		5. ESTABLISHED (YEAR) 1960		6. TYPE OWNERSHIP Corporation	
7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE Foster Plaza 7, 661 Andersen Drive, Pittsburgh, PA 15220 / (412) 921-7090 / Mark Speranza, PE / 4 AML Design Teams in this office (4 Design Engineers and 4 CADD Professionals) and 4 additional CADD Professionals in this office		8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS Mr. Thomas Gray, PE - Energy and Natural Resources Manager (412) 921-8794		6a. WV REGISTERED DBE (Disadvantaged Business Enterprise) No	
9. PERSONNEL BY DISCIPLINE					

30 ADMINISTRATIVE	2 ECOLOGISTS	LANDSCAPE ARCHITECTS	STRUCTURAL ENGINEERS
ARCHITECTS	1 ECONOMISTS	3 MECHANICAL ENGINEERS	3 SURVEYORS
3 BIOLOGIST	1 ELECTRICAL ENGINEERS	6 MINING ENGINEERS	TRAFFIC ENGINEERS
8 CADD OPERATORS	39 ENVIRONMENTALISTS	PHOTOGRAMMETRISTS	52 OTHER
14 CHEMICAL ENGINEERS	2 ESTIMATORS	PLANNERS: URBAN/REGIONAL	
24 CIVIL ENGINEERS	16 GEOLOGISTS	SANITARY ENGINEERS	
3 CONSTRUCTION INSPECTORS	HISTORIANS	2 SOILS ENGINEERS	217 TOTAL PERSONNEL (IN THIS OFFICE)
4 DESIGNERS	5 HYDROLOGISTS	WRITERS	
DRAFTSMEN			12,000+ Personnel company-wide

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 4

*RPES other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.

10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? ☐ YES ☐ NO ☐ N/A

11. OUTLINE KEY CONSULTANTS/SUB-CONSULTANTS ANTICIPATED TO BE USED. ATTACH "AML Consultant Qualification Questionnaire".

[illegible]

A. Are your firm's personnel experienced in Abandoned Mine Lands Remediation/Mine Reclamation Engineering?

YES Description and Number of Projects: Tetra Tech and its consultants have completed over 300 abandoned mine land projects - Attachment C is only a partial listing. Our Project Manager, Thomas Gray, PE, has been working on abandoned mine reclamation projects for the past 24 years, with many in West Virginia. Tetra Tech has been involved with mine reclamation for many years throughout the western U.S. and is providing similar services in the Appalachian coal fields. Our Charleston, WV office will provide local support as needed.

B. Are your firm's personnel experienced in Soil Analysis?

YES Description and Number of Projects: Tetra Tech has conducted thousands of soil investigations worldwide that included sampling and analysis. Along with this site work, we have provided thousands of reports presenting the results of the investigations. We have extensive specialized experience and technical competence in providing soil sampling and analysis services, including more than 6,000 environmental site characterizations (including at mining sites) and more than 1,000 geotechnical investigations. We have trained and experienced field sampling crews available to support this project.

C. Are your firm's personnel experienced in hydrology and hydraulics?

YES Description and Number of Projects: Tetra Tech has over three decades of experience in hydrology and hydraulics with hundreds of projects. Our expertise and knowledge in evaluating hydrologic systems is applied to specific water resource project types including water resource and flood damage assessment, flood control designs (including channels, levees, detention basins and bank protection, hydraulic structure design, erosion and sedimentation studies, stream restoration and wetland design, dam and levee safety evaluations, reservoir operation/optimization studies, flood-control and flood management studies and mapping, development of flood warning systems, dam break flood studies and contingency planning, stormwater drainage design, surface and groundwater supply analysis. The basis of these hydrologic studies is the application of HEC software such as HEC-HMS, Geohms, HECFFA, HEC-SSP, HEC-DSSVue, HEC-ResSim, CWSM and legacy software such as HEC-1, HEC-5, HEC-DSS, and COED.

D. Does your firm produce its own Aerial Photography and Develop Contour Mapping?

YES Description and Number of Projects: Tetra Tech employs 15 GIS and CADD personnel in its Pittsburgh office and has all necessary software for map development. Our firm hires subcontractors when necessary for aerial photography to develop contour maps. Tetra Tech has completed aerial photography and/or contour mapping for over 100 projects.

E. Are your firm's personnel experienced in domestic waterline design? (Include any experience in evaluation of aquifer degradation as a result of mining.)

YES Description and Number of Projects: Tetra Tech has extensive expertise in modeling, designing, and building reliable, save and cost-effective water transmission and distribution systems. Our experience encompasses all aspects of transmission and distribution systems, including large diameter water mains, distribution piping, booster pumping stations, storage tanks and metering facilities. We have performed hundreds of domestic water line design projects nationwide for many municipalities and water authorities.

F. Are your firm's personnel experienced in Acid Mine Drainage Evaluation and Abatement Design?

YES Description and Number of Projects: Tetra Tech and its personnel have extensive acid mine drainage evaluation and abatement design experience. Our firm has recently completed 13 acid mine drainage evaluation/abatement design projects and our personnel, including Project Manager Thomas Gray, PE, have completed more than 30 acid mine drainage and abatement projects at other firms. Mr. Gray also managed an open-end contract for the Maryland Bureau of Mines, which included over 16 projects relating to mining, acid mine drainage treatment, and mine reclamation.

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)			
NAME & TITLE (Last, First, Middle Init.) Gray, Thomas, A., PE Project Manager	YEARS OF AML DESIGN EXPERIENCE: 24	YEARS OF AML RELATED DESIGN EXPERIENCE: 36	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 18
Brief Explanation of Responsibilities			
<p>Mr. Gray recently managed the Paint Branch, Tunnelton, and Posey/Fisher Run AML projects for WVDEP. He previously worked at GAI, managing their Charleston, WV office in the 1990s. Since 2000, Mr. Gray has participated in 53 AMR projects and has managed 30 projects for the OSM, including evaluation of five landslides and remediation design. He also managed contracts for PADEP and the MD BOM and has consulted to the WVDOH on mining issues. WVDEP projects include the Omega mine grouting project, Owings mine reclamation, Majesty mine reclamation, Godby branch water supply extension, and Left Hand Fork Refuse fire control. He has published over 30 articles related to mining and reclamation, including the chapter entitled, 'Mine Closure, Sealing, and Abandonment' in SME's Mining Engineering Handbook.</p>			
EDUCATION (Degree, Year, Specialization) BS, 1973, Mining Engineering / MBA, 1977, Business Administration		REGISTRATION (Type, Year, State) Professional Engineer in five states including, West Virginia (1988); Pennsylvania (1978); Virginia (1980); Ohio (2009); and Maryland (1989)	
13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)			
NAME & TITLE (Last, First, Middle Init.) Gray, PG, Richard, E. Project Advisor/Geologist	YEARS OF AML DESIGN EXPERIENCE: 26	YEARS OF AML RELATED DESIGN EXPERIENCE: 26	YEARS OF AML DESIGN EXPERIENCE: 11
Brief Explanation of Responsibilities			
<p>As a consultant to Tetra Tech, Mr. Gray will serve as a Project Advisor and Project Geologist. Mr. Gray is a landslide expert consultant and has participated in field studies of landslides in several states, including West Virginia, and around the world. He has also completed numerous subsidence investigations and mitigation designs within the City of Fairmont, West Virginia for the WVDEP. Recent landslide projects in West Virginia include the Duck Creek Landslide (Gilmer County), Greens Run Highway (Preston County), the Bear Run Refuse Project (Gilmer County), and refuse projects in Bridgeport, Kimball, Vivian, Omar, and Fayette County. He will also be used to conduct a peer review of the design plans and specifications before they are finalized and is highly regarded in the AML design field. He was the project manager on all of GAI's AML projects for the WVDEP from 1983 to 1995 and served as a technical consultant for all of the GAI projects with WVDEP from 1995 until 2005.</p>			
EDUCATION (Degree, Year, Specialization) BS, Civil Engineering		REGISTRATION (Type, Year, State) Professional Geologist in 12 states including Virginia, Kentucky, Pennsylvania, Delaware, North Carolina, South Carolina, Florida, Indiana, Illinois, Alabama, California, and Wyoming.	
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS American Society of Civil Engineers American Association for the Advancement of Science Society of American Military Engineers			

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	
Blair, PE, Roger Project Engineer	30	30	0

Brief Explanation of Responsibilities

Mr. Blair has more than 45 years of project experience and will serve as a Project Engineer on our team. Mr. Blair worked with the Kentucky State Government in a variety of positions for 16 years and has worked on more than 20 landslide design/construction projects in Virginia and Kentucky. He also has completed several mining-related subsidence projects. Many of his AML projects have been performed for state agencies such as the Office of Surface Mining, the Virginia Division of Mine Land Reclamation, and the Kentucky Division of Abandoned Mine Lands. Mr. Blair has also authored approximately 80 technical reports.

EDUCATION (Degree, Year, Specialization)

MA, 1981, Public Affairs
BS, 1965, Civil Engineering
Diplomate, American Academy of Environmental Engineers

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

National Society of Professional Engineers
American Academy of Environmental Engineers
Kentucky Society of Professional Engineers

REGISTRATION (Type, Year, State)

Professional Engineer in Virginia and Kentucky

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	
Lemaster, PE, Herbert Project Engineer	15	15	0

Brief Explanation of Responsibilities

Mr. Lemaster will serve as a project engineer on our team and has worked on 12 abandoned mine land projects, including six landslide projects. He is a registered Professional Engineer and Land Surveyor in Training. He has a wealth of experience with landslide and stabilization projects in Virginia and Kentucky. These landslide projects have included design and construction engineering services. Mr. Lemaster is responsible for analysis and design, writing specifications, developing contract documents and cost estimates, preparation of construction drawings, construction administration, and construction engineering. Mr. Lemaster also has experience as project engineer for numerous projects in mine permitting, abandoned mine land reclamation, determining probably hydrologic consequences of mining, and developing geologic statements for proposed mining operations, providing services on abandoned mine land projects for Kentucky, Virginia, and the Office of Surface Mining.

EDUCATION (Degree, Year, Specialization)

MS, 1992, Civil Engineering
BS, 1990, Civil Engineering
AS, 1988, Science

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Kentucky Society of Professional Engineers

REGISTRATION (Type, Year, State)

Professional Engineer, 1997, Kentucky
Land Surveyor-In-Training, Kentucky,

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:
Cummings, Biff, D., PE Project Engineer	16	16

YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 16

Brief Explanation of Responsibilities

Mr. Cummings is a registered Professional Engineer in West Virginia and five additional states. His expertise includes management of litigation for landslide and mine subsidence. It was contended by a homeowner that mine subsidence led to a landslide that was damaging his home and the coal company hired ICF Kaiser to support its defense. Mr. Cummings developed plans for the installation of slope monitors, supervised long-term data collection, analyzed data, evaluated seasonal hydrogeologic conditions, and provided documentation for use in court. He completed a variety of mine reclamation projects including the West Virginia Mark Mine Acid Drainage Abatement and various home subsidence investigations. He also performed AML related activities under contracts in WV, OH, MD, and VA, and subsidence evaluations for private firms and OSM in WV, PA, OH, and MD.

EDUCATION (Degree, Year, Specialization)

BS, 1978, Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers

REGISTRATION (Type, Year, State)

Professional Engineer in six states including West Virginia (2004); Pennsylvania (1984); Ohio (1994); Illinois (2006); Alabama (2005), and Indiana (2004)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE	
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:
Hallman, PE, PG, Dave Project Advisor	20	20

YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 0

Brief Explanation of Responsibilities

Mr. Hallman has over 20 years of experience specializing in landslide evaluation, geotechnical engineering, and construction on a variety of mining and civil engineering projects throughout the world. His technical expertise includes landslide evaluation for four projects, mine subsidence, static and dynamic stability of embankments and natural slopes, rock slope stability, seismic risk assessments, liquefaction evaluations, dynamic deformation analyses, liner and seepage cutoff system design and evaluation, tailings and water dam design and construction, and design and construction of heap leach and landfill facilities. Mr. Hallman has also authored several related publications.

EDUCATION (Degree, Year, Specialization)

BS, 1983, Geological Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

REGISTRATION (Type, Year, State)

Professional Engineer, 1994, Missouri
Professional Engineer, 2002, Texas
Professional Engineer, 1990, Alaska
Professional Engineer, 1989, Colorado
Professional Engineer, 2002, Wyoming
Professional Engineer, 1996, Idaho
Professional Geologist, 2004, Wyoming

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES		RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)	
NAME & TITLE (Last, First, Middle Int.) Furniss, Matthew, D., EIT Project Engineer		YEARS OF AML DESIGN EXPERIENCE: 3	YEARS OF AML RELATED DESIGN EXPERIENCE: 3 YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 0
Brief Explanation of Responsibilities			
<p>Mr. Furniss has six years of mining engineering experience, which includes design, construction, research and development, and CAD/Drafting. His project experience includes serving as a Project Engineer for a number of projects for the WVDEP Office of AML and Reclamation including the Tunnelton Abandoned Mine Portals Closure Project, the Posey/Fisher Run AML project, and the Paint Branch AML project. His experience also includes the Bear Run Phase II Acid Mine Drainage Passive Treatment System Design, the Gladden Mine Reclamation Acid Mine Drainage Treatment System Design and a variety of work for BHP Billiton New Mexico Coal including mine reclamation, mine feasibility analyses, and cost analyses.</p>			
EDUCATION (Degree, Year, Specialization)			
MS, 2009, Mining and Minerals Engineering BS, 2007, Mining and Minerals Engineering			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS		REGISTRATION (Type, Year, State)	
Society for Mining, Metallurgy, and Exploration		Engineer-in-Training in Virginia (2007)	
13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR AML PROJECT DESIGN (Furnish complete data but keep to essentials)			
NAME & TITLE (Last, First, Middle Int.) Hoppe, Ben CAD Designer		YEARS OF AML DESIGN EXPERIENCE: 2	YEARS OF AML RELATED DESIGN EXPERIENCE: 6 YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE: 0
Brief Explanation of Responsibilities			
<p>Mr. Hoppe is a CAD Designer with over six years of relevant experience. He has performed design work on a variety of AML projects for the WVDEP including the Tunnelton Abandoned Mine Portals Closure Project, the Posey/Fisher Run AML project, and the Paint Branch AML project. His CAD design experience includes all phases of civil design work including but not limited to, site grading, proposed roadway geometry layout and utility layout. Mr. Hoppe is experienced in subdivision design, landfill design, and utility work and capable of providing accurate earthwork volumes for designs, layout of sewer and storm sewer systems (gravity and low pressure) using 3D models and complex grading designs using 3D civil software ensuring accuracy.</p>			
EDUCATION (Degree, Year, Specialization)			
AAS, 2004			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS		REGISTRATION (Type, Year, State)	

14. PROV : A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN T PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AM
DESIGN SERVICES

TR-55, STABL5, HEC-HMS, GeohMS, HECFFA, HEC-SSP, HEC-DSSVue, HEC-Ressim, CWMS and legacy software such as HEC-1, HEC-5, HEC-DSS and COED

Microsoft Office Professional and Microsoft Project

Adobe Photoshop

Adobe Acrobat Version 9.0

AutoCAD Map 3D 2008 / AutoCAD 2008

AutoDesk Civil 3D 2007

ESRI ArcGIS 9.2

ESRI ArcView 3.3

Bentley PondPack (Haestad Methods) Version 9.0

Bentley Flow Master (Haestad Methods)

Bentley HEC-Pack

STABL5M

Hydrologic Evaluation of Landfill Performance (HELP)

Groundwater Vistas Version 3.5 (MODFLOW based 3D finite difference model, including MT3D, RT3D, MODPATH, MODFLOWT, and SWIFT Components)

GMS (MODFLOW based 3D finite difference model, including MT3D, RT3D, MODPATH, and 3-D spatial analysis components)

Visual MODFLOW (MODFLOW based 3D finite difference model, including MODPATH)

SWANFLOW (3D finite difference model specializing in 3-phase fluid flow in porous media - water, NAPL, air)

Several analytical-based software packages including BIOCHLOR, BIOSCREEN, and SESOIL

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
WVDEP Abandoned Mine Land Source Tracking and Acid Mine Drainage Water Quality Modeling, West Virginia	WVDEP Office of Abandoned Mine Lands and Reclamation 105 S. Railroad Street Philippi, WV 26416	Abandoned Mine Land Source Tracking and Assessment / Acid Mine Drainage Water Quality Modeling	\$4,100,000	Ongoing
WVDEP Total Maximum Daily Load Program, West Virginia	WVDEP Office of Abandoned Mine Lands and Reclamation 105 S. Railroad Street Philippi, WV 26416	Development of TMDLs	\$500,000	Ongoing
TOTAL NUMBER OF PROJECTS: 2 (Only WVDEP projects are shown)			TOTAL ESTIMATED CONSTRUCTION COSTS: \$4,600,000	

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
WVDEP Fisher Run (Posey) Mine Reclamation, AML Reclamation, West Virginia	WVDEP Office of Abandoned Mine Lands and Reclamation 105 S. Railroad Street Philippi, WV 26416	\$292,600	2010	Yes
WVDEP Paint Branch Abandoned Mine Land Project, West Virginia	WVDEP Office of Abandoned Mine Lands and Reclamation 105 S. Railroad Street Philippi, WV 26416	\$74,000	2010	Not yet constructed
WVDEP Tunnelton Mine Portal Closure Design, West Virginia	WVDEP Office of Abandoned Mine Lands and Reclamation 105 S. Railroad Street Philippi, WV 26416	\$62,300	2010	Yes
Powderly Creek Abandoned Mine Land Acid Mine Drainage Feasibility Study	U.S. Army Corps of Engineers, Baltimore District 10 South Howard Street Baltimore, MD 21201	N/A	2005	N/A
Clear Creek Central City Superfund Site Remediation of Mine Waste Pile with Acid Mine Drainage	Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246	\$1,400,000	2007	Yes
Bear Run Acid Mine Drainage Passive Treatment System, Pennsylvania	Indiana County Conservation District in conjunction w/PADEP 1432 Route 286 Hwy. E Indiana, PA 15701	\$250,000	2010	Yes
Gladden Mine Site Grading Plan and Acid Mine Drainage Treatment System, Pennsylvania	South Fayette Conservation Group in conjunction w/PADEP 515 Millers Run Road Morgan, PA 15064	\$3,600,000	2009	Yes
Sunrise Mine Abandoned Mine Land Monitoring	Wyoming Department of Environmental Quality, Abandoned Mine Land Division	N/A	2006	N/A

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD					
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)	
Ohio Valley Coal Company Mine Seal Closure Designs, Closure Designs, Ohio	Ohio Valley Coal Company 56854 Pleasant Ridge Road Alledonia, OH 43902	N/A	2008	N/A	
Report on Current Mine Rescue Practices in China, Report, China	Center for Disease Control, NIOSH	N/A	2008	N/A	
West Elk Mine Subsidence Evaluation and Report, Subsidence Evaluation and Report, Colorado	Mountain Coal Company 5174 Highway 133 Somerset, CO 81434	N/A	2008	N/A	
Marjol Battery Plant RFI Oversight and Mine Subsidence Investigation	EPA Region III 1650 Arch Street Philadelphia, PA 19103	N/A	2009	N/A	
Colorado Springs Mine Subsidence Abatement	Colorado Department of Natural Resources, Division of Reclamation, Mining, and Safety	N/A	2009	N/A	

18. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONSULTANT TO OTHER FIRMS (INDICATE PHASE OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE)

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
N/A					

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

Please see our accompanying information for additional qualifications.

20. The foregoing is a statement of facts.

Date: November 30, 2010

Signature: Mark P. Speranza Title: Pittsburgh Office Manager

Printed Name: Mark Speranza, PE

Attachment C

ATTACHMENT C

Tetra Tech's mine reclamation projects have included many of the services required for this project including landslide design, revegetation, and surveying.

As required in the RFP, we have completed Attachment C and included it in this section. The form details some of our firm's related mining experience. Additionally, we have included detailed project descriptions for the first five projects, which can be found in Section E of our proposal.

Please note that this is not an exhaustive list of the thousands of mining projects completed by Tetra Tech nationwide.

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C=Corp. P=Personal	Additional Info Provided in Section (s)	PROJECT EXPERIENCE REQUIREMENTS													PRIMARY STAFF PARTICIPATION/CAPACITY *** M=Management P=Professional																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/Mitigation/ Replacement	Construction Inspection/Management	Water Treatment	Equipment/Structure Removal	Stream Restoration	Geotechnical/Stability	Thomas Gray, PE	Richard Gray, PG	Biff Cummings, PE	Roger Blair, PE	Matthew Furniss, EIT	Other Tetra Tech or Team Personnel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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WVDEP PROJECTS																								
WVDEP Tunnelton Mine Portal Closure for Drainage	C		X	X						X				X			M	P			P	P		
WVDEP Fisher Run (Posey) Mine Portal Closure	C			X	X					X	X						M	P			P	P		
WVDEP Paint Branch Mine Portals Design	C			X						X							M				P	P		
WVDEP Hydrology and Water Quality Modeling	C		X	X	X						X	X			X							M		
WVDEP TMDL Water Quality Project	C		X	X	X						X	X			X							M		
WVDEP Grout Injection Research Project	P							X		X	X						M					M		
WVDEP Water Supply Extension Project	P										X						P	M						
WVDEP Godby Branch Water Supply Extension	P		X	X							X					X	M	M						
WVDEP Gauley River Heizer/Manila Water Line	P																P	M						
WVDEP Lethand Fork Burning Refuse	P		X		X					X					X		M							
WVDEP Coal Refuse Pile Reclamation Projects	P																	M						
WVDEP Majesty Mine Complex Restoration	P		X	X	X						X	X	X	X	X		M							
WVDEP Owings Mine Grouting Design	P			X	X							X	X	X	X		M	M						
* List whether project experience is corporate or personnel based or both.																								
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PROJECT EXPERIENCE REQUIREMENTS		PRIMARY STAFF PARTICIPATION/CAPACITY
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PROJECT EXPERIENCE REQUIREMENTS	PRIMARY STAFF PARTICIPATION/CAPACITY *** M=Management P=Professional

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			Thomas Gray, PE	Richard Gray, PG	Biff Cummings, PE	Roger Blair, PE	Matthew Furniss, EIT	Other Tetra Tech or Team Personnel													
MINE FIRES																					
Dhanbad World Bank Mine Fire Appraisal	P																P				
Office of Surface Mining Maiole Mine Fire	P																M				
OSM Dolph Mine Fire Abatement	P																M				
Percy Mine Fire Control Project	P																P				
Barton Mine Fire Control Project	P															M					
OSM Surface Coal Mine Fire Abatement	P																M				
Rifle Coal Mine Fire Investigation	C																				
Wiberg Mine Fire Investigation	P																				
Skyline Mine Substation Fire Investigation	P																				
Jharia Coal Field Fire	P															M					
Office of Surface Mining Elk County Surface Mine Fire	P																M				
Centralia Mine Fire	P																M				
Glen Burn Mine Fire	P																M				
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			MINE PERMITTING / PLANS / REPORTS															Thomas Gray, PE	Richard Gray, PG	Biff Cummings, PE	Roger Blair, PE	Matthew Furniss, EIT	Other Tetra Tech or Team Personnel											
NIOSH Mine Rescue Practices Report in China	C																	M										P						
PADEP AMR Program Business Plan	P																												M					
PADEP Abandoned Mine Reclamation Comp. Plan	P																												M					
PADEP Surface Mining Permit Policy Development	P																												M					
Maryland DNR Guidelines for Mine Coal Ash Disposal	P																												M					
Cannelton Mine Operator Permitting Evaluation	P																												M					
South. Ohio Coal Longwall Mine Extension Permitting	P																												M					
MD DOE Bureau of Mines Permitting Assist. Open End	P								X																				M					
Eastern Utah Conceptual Underground Mine Plan	C																																	
Colorado Mining for Oil Shale Scoping Report	C																																	
Colorado Room and Pillar Mine Plan and Cost Analysis	C																												M					
Colorado Demonstration Mine Plan and Cost Estimate	C																												M					
Printer Boy Mine Permitting and Plan Development	P																												P					
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Info
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PROJECT EXPERIENCE REQUIREMENTS

Abandoned Surface
Mine Reclamation
Abandoned Deep Mine
Reclamation
Portal/Shaft Closure
Hydrologic/Hydraulic
Design/Eval.
Remining Evaluation
Mine/Refuse Fire
Abatement
Subsidence
Investigation Mitigation
Hazardous Waste
Disposal
Project Specifications
Water Quality
Evaluation/Mitigation/
Replacement
Construction
Inspection/Management
Water Treatment
Equipment/Structure
Removal
Stream Restoration
Geotechnical/Stability

Thomas Gray, PE

Richard Gray, PG

Biff Cummings, PE

Roger Blair, PE

Mathew Furniss, EIT

Other Tetra Tech or
Team Personnel

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			Thomas Gray, PE	Richard Gray, PG	Biff Cummings, PE	Roger Blair, PE	Mathew Furniss, EIT	Other Tetra Tech or Team Personnel																
MINE WATER-RELATED PROJECTS																								
Kempton Mine Water Treatment Facility	P												X				M							
MD DOE Bureau of Mines Hydrogeology Open End	P																X							
BOM Raynor/Kinsinger Water Supply Investigation	P																X							
MDDOE Bureau of Mines Mill Run Water Quality Impacts	P																X							
Upper St. Clair Underground Mine Pool Storage	P																X							
Jonathan Run Stream Restoration Plan	C/P																X	X	X					
Shelocta Hydrology Evaluation w/Mining Impacts	C/P																X							
Abandoned Mine Storage of Sewer Overflow	P																X	X	X					
Left Hand Creek Loading to Abandoned Mine Sources	P																					P		
Shannopin Deep Mine Water Migration Evaluation	P																					M		
Coeur D'Alene Mines Make-Up Water Requirements	P																					P		
Central Valley Mine Waste TML Reduction	C																					M		
USFS Relief Hill Hydraulic Mine Sampling/Mapping	C																					M		
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Personnel



ABOUT OUR PROJECT MANAGER **THOMAS A. GRAY, PE**

Thomas Gray, PE is the Energy and Natural Resources Manager at Tetra Tech. He has a large amount of project experience in West Virginia, having previously managed an engineering office in Charleston. He is a technical expert in mining engineering and reclamation projects. His long career has included **over 100 mining-related projects**.

Mr. Gray has over 36 years of professional mining experience and is a registered Professional Engineer in West Virginia, Pennsylvania, Virginia, Maryland, and Ohio. He specializes in abandoned mine land reclamation and his project management responsibility has included construction, engineering, regulatory compliance, and research and development. He has also managed various AML projects for the West Virginia Department of Environmental Protection including the Fisher Run Mine Drainage Portal Closure and the Tunnelton Mine Drainage Portal Closure.

He is a member of many industry organizations and is recognized as a Distinguished Member in the Society for Mining, Metallurgy, and Exploration. In addition to authoring over 25 mining-related publications, Mr. Gray has also made presentations at mining conferences around the U.S.

Mr. Gray received a BS degree in Mining Engineering from The Pennsylvania State University and an MBA degree from The University of Pittsburgh.



Thomas A. Gray, PE
Project Manager

EDUCATION:

MBA, Business Administration, University of Pittsburgh, 1977
BS, Mining Engineering, The Pennsylvania State University, 1973

**CERTIFICATIONS/
REGISTRATIONS:**

Professional Engineer, West Virginia, 10523, 1988
Professional Engineer, Pennsylvania, 26978-E, 1978
Professional Engineer, Maryland, 17048, 1989
Professional Engineer, Virginia, 11628, 1980
Professional Engineer, Ohio, 73686, 2009

PRIOR PROJECT EXPERIENCE:

Project Manager, OSM Galbraith Landslide Abatement/Geotechnical Investigation; Allegany County, MD. Conducted a geotechnical investigation to gather the required site information to design landslide abatement measures for a 140-ft. wide landslide uphill from the Galbraith residence in Barton, MD. The investigation involved drilling, testing, and surveying to characterize the site, and design abatement measures to stabilize the landslide.

Project Manager; OSM Coal Refuse Pile Slope Stabilization; Allegany County, MD. Prepared an abatement plan for stabilizing the slope of a coal refuse pile (Sand Spring gob pile) adjacent to a small stream. The refuse pile was eroded by the stream during Hurricane Ivan and left a near vertical, unstable slope. The abatement plan consisted of a combination of regrading and vegetative ("soft armoring") and riprap stabilization. Hydrologic and hydraulic analyses were also provided.

Project Manager; OSM Little River Mining Reclamation Project; Cloudland, GA. The Office of Surface Mining Little River Reclamation project near Cloudland, Georgia, required regrading an abandoned coal mine strip pit to eliminate a highwall, construction of drainage channels, and revegetation of disturbed areas. The survey was conducted to prepare site topography and cross sections at 50-foot intervals for reclamation and restoration of approximately 2,500 feet of abandoned highwall (as high as 100 feet) from surface mining. A grading plan was prepared that included site drainage features for two drainage channels.

Project Consultant; West Virginia Division of Environmental Protection Reclamation Design of Abandoned with Mine Portals and Refuse Piles, Charleston, WV. Reclamation design of an abandoned mine site comprising old mine structures, open mine portals, refuse piles and numerous acid mine drainage (AMD) producing discharges. Evaluated water quality and designed a passive AMD treatment system design at the Owings Mine Complex site. Awarded: James E. "Pete" Pitsenbarger Abandoned Mine Land Award North, 1999 West Virginia Reclamation Awards.

Project Manager; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Fisher Run Mine Portal Design Closure; Weston, WV. Project Manager for the investigation and design for the closure of seven mine portals on private property. Prepared construction specifications and construction cost estimate.



Thomas A. Gray, PE
Project Manager

Project Manager; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Tunnelton Mine Portal Closure Design for Acid Mine Drainage; Tunnelton, WV. Project Manager for the investigation and design for the closure of two mine portals on separate property parcels. Prepared construction specifications and construction cost estimate.

Project Manager; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Paint Branch Mine Project; Kanawha, WV. Project Manager for this project involving the installation of splash pads and metal bat gates on three abandoned mine portals and the removal of approximately 48 abandoned bridge piers in Paint Branch.

Project Manager; West Virginia Division of Environmental Protection Abandoned Mine Workings Injection Project to Reduce Acid Mine Drainage; Monongalia County, WV. This research and demonstration project injected coal combustion byproduct based grout into 25 acres of abandoned mine workings to reduce the generation of acid mine drainage and to reduce subsidence potential. Responsible for R&D investigation, construction plans and specifications, monitoring construction, and preparing a research report. Sponsors included Allegheny Energy, the DOE, Consol Inc. and the Electric Power Research Institute.

Project Advisor; West Virginia Division of Environmental Protection Water Line Extension; Nicholas County, WV. Evaluated construction documents for the Gauley River and Heizer/Manila Creek water line extension projects.

Project Advisor; West Virginia Division of Environmental Protection Water Supply System; Chapmanville, Logan Count, and WV. Designed a water supply system to service approximately 800 residents of the Mill Creek-Isom Community along Godby Branch watershed.

Project Advisor; West Virginia Division of Environmental Protection Water Supply Extension; Logan County, WV. Prepared construction documents for a water supply extension project.

Project Manager, OSM Coal Refuse Pile Regrading Abatement and Revegetation, Allegany County, MD. Prepared an abatement plan for stabilizing the slope of a coal refuse pile (Sand Spring gob pile) adjacent to a small stream. The refuse pile was eroded by the stream during Hurricane Ivan and left a near vertical, unstable slope. The abatement plan consisted of a combination of regrading and vegetative ("soft armoring") and riprap stabilization. Hydrologic and hydraulic analyses were also provided.

Project Manager; OSM Dolph Coal Refuse Mine Fire; Lackawanna County, PA. The Dolph mine fire was burning in coal refuse and two underground abandoned anthracite coal mines. A site investigation was completed to define the limits of fire and to recommend fire control methods. A cut-off trench was selected, plans and specifications were prepared and a contractor was selected. Construction was successfully completed and the fire is under control.

Project Manager; Paint Creek Watershed Association Jandy Coal Refuse Disposal Site Acid Mine Drainage Investigation; Windber, PA. Investigated mine drainage on the Jandy coal refuse disposal site for this project in association with PADEP. It was determined that the



Thomas A. Gray, PE
Project Manager

source of the contamination was a reclaimed surface mine spoil and adjacent abandoned deep coal mine. The selected mitigation was to reduce the surface infiltration through drainage controls and to reduce the level of the mine pool so that the groundwater levels would be reduced and thus eliminate the discharge. Design plans were prepared.

Project Manager; Island Creek Corporation Refuse Disposal Area Hydrologic Impact Assessment; Grant County WV. Prepared a cumulative hydrologic impact assessment of the Alpine Number 2 refuse disposal area.

Project Manager; Maryland Department of the Environment Bureau of Mines Open-End Mining Contract; Frostburg, MD. Managed 16 projects under this open end contract to provide technical assistance in mining engineering, acid mine drainage treatment and mine reclamation.

Project Engineer; Capels Resources, Inc. (Subsidiary to Berwind Corporation) Subsidence Assessment; McDowell County, WV. Preliminary subsidence assessment project for underground coal mining property being proposed as a sanitary landfill.

Project Manager; Island Creek Coal Corporation (subsidiary to Occidental Petroleum) Mine Development Services; Bayard, WV. Completed mine development plans, cost estimating, and permitting services for the mining of coal waste and the disposal of AFBC ash at the North Branch Mine, including exploration and geotechnical evaluation.

Project Engineer; Mitchell Power Plant Site Selection, Moundsville, WV. Completed a site selection evaluation of a new solid waste landfill at a coal-fired electric generating facility. The site was underlain by coal that had been deep mined using room and pillar mining.

Project Manager; Cannelton Industries Surface Mining Equipment Time and Motion Studies; Charleston, WV. Conducted time and motion studies for surface mining equipment at a mountain top removal operation, including draglines, off road trucks and hydraulic excavators.

Project Manager; West Virginia Division of Highways, PennDOT, and PA Turnpike Commission Mineral Reserves Appraisal Reports; WV and PA. Appraisal reports of mineral reserves related to highway right of way acquisition, including expert witness testimony.

Project Manager; Mettiki Coal Corporation Construction Management; Mt. Storm, WV. Provided construction management support for the construction of a new coal handling and storage facility at the Mt. Storm power plant and a three mile coal haul road.

Project Manager; Cannelton Industries Mine Permitting and Environmental Compliance Evaluation; Charleston, WV. Evaluated permit and environmental compliance of a subcontracted surface mine operator and preparation of an expert witness legal report.

Project Manager; Island Creek Coal Corporation (subsidiary to Occidental Petroleum) Structural Integrity Evaluation; Grant and Tucker Counties, WV. Structural integrity investigation project for a 125-foot-high, 500 kV steel lattice transmission tower immediately above chain pillars separating two longwall panels of a 300 feet deep mine. Responsible for evaluations, including structural analysis and prediction of the impacts of active longwall mining on the electrical transmission tower.



Thomas A. Gray, PE
Project Manager

Project Engineer; BethEnergy Mines Feasibility Study; Nicholas County, WV. Conducted a feasibility study of a four million ton per year mountain-top removal project. The mine was permitted and operated successfully.

Project Engineer; ANR Coal Company Mine Complex Evaluation; Webster County, WV. Completed a feasibility study and economic evaluation for a one million ton per year West Virginia mine complex. Provided permitting services, prepared construction plans and specifications and provided onsite construction management.

Project Manager; Maryland Department of the Environment, Bureau of Mines Open-End Hydrogeology Contract; Frostburg, MD. Managed an open end contract that provided hydrogeology services to the state agency. Investigated and provided expert opinions of the impacts on two domestic water supply sources from surface mining in Raynor and Kinsinger, MD. Reported on the impacts of surface coal mining activities on the quality and quantity of local groundwater supplies in the vicinity of Mill Run, MD. Reviewed the groundwater hydrology section of a surface coal mine permit application.

Project Manager; Maple Coal Company Refuse Pile Heating Reduction; Colver, PA. Prepared technical specifications for reducing the potential for spontaneous heating.

Project Manager; Indiana County Conservation District Bear Run Phase II, Acid Mine Drainage Passive Treatment System; Indiana County, PA. Project Manager for the design of a passive acid mine drainage mine treatment system, site grading and PADEP / Indiana County Erosion and Sediment Control permit, stream restoration and preparation of a PADEP Government Financed Construction Contract for a third party contractor to remove coal refuse from the site. Prepared construction grading plans, permits and hydraulic analysis of the Bear Run stream for a stream culvert crossing.

Project Manager; South Fayette Conservation Group Site Grading Plan and Passive Acid Mine Drainage Treatment System; South Fayette Township, PA. Preparation of a site grading plan and passive AMD treatment system to treat a maximum flow rate of 1,500 gpm of AMD flow from the abandoned Gladden Mine into Millers Run and Chartiers Creek. Preparation of a grading plan, specifications and design calculations to create 3 acres of passive treatment ponds and design of a spray pumping system to deliver 1,000 gpm of AMD through a nozzle system for aeration and evaluation of stream flow losses in areas affected by past mining.

Project Manager; Chartiers Nature Conservancy in association with PADEP Deep Mine Discharge Evaluation; Crafton, PA. Assessed the characteristics of the large deep mine discharges in the Chartiers Creek main stem. Flow and chemical data was collected for nine mine discharges over a 12 month period. Mine maps were obtained and scanned into a GIS database. The conceptual hydrology of the mines was evaluated, including underground drainage basins and pooled conditions. This information was used to develop a restoration plan for the watershed.



Thomas A. Gray, PE
Project Manager

SELECTED PUBLICATIONS:

- 2009 Gray, T. A., Bruhn, R.W., Mack, J.F. (OSM) "Dolph Abandoned Mine Fire Control Project" presented at the 2009 annual SME meeting in Denver, Colorado, February 22-25, 2009.
- 2007 Gray, T.A., "Surface Mining" article for inclusion in McGraw-Hill Encyclopedia of Science and Technology, 10th edition
- 2005 Gray, T.A., and Horrell, S. (PADEP). "Ninevah Acid Mine Pollution Abatement Project" presented at the 2005 World of Coal Ash, Lexington, KY, April 15, 2005.
- 2004 Gray, T.A., Crayne, L.M., Trevits, M.A., Glogowski, P.E. "Demonstration of Remote Mine Seal Construction" presented at the Annual SME Meeting, Denver, Colorado, February 23-25, 2004.
- 2003 Gray, T.A., and Broush, J.C. "Use of GIS in Mining Applications" presented at the Seminar on the Use of GIS in Mining Application at California University, Canonsburg, PA, May 8, 2003.
- 2003 Gray, T.A., and Smith, Ed, USACE, "Ecosystem Restoration - South Branch Blacklick Creek" published in the March-April 2003 issue of The Military Engineer, SAME's monthly magazine.
- 2002 Gray, T.A., Gray, R.E. "Coal Combustion Products Can be Used to Construct Tailing Dams" presented at the 19th Annual International Pittsburgh Coal Conference, Pittsburgh, PA, September 25, 2002.
- 2002 Gray, T.A. and Gray, R.E. "Omega Mine Injection Projects" presented at the PA Conference on Abandoned Mine Reclamation, June 15, 2002, State College, PA.
- 2002 Gray, T.A., Gray, R.E., and Newman, F.B. "Utilization of Coal Combustion By-Products in Tailing Dams" - Tailing Dams 2002 meeting in Las Vegas, NV, May 1, 2002.
- 2000 Gray, T. A., Kyper, T.N., Smith, E., and Hedin, R. "Feasibility Study for Ecosystem Restoration by Remediation of the Webster Mine Discharge at Nanty Glo, Pennsylvania." Presented at the U.S.D.O.E., NETL Facility, Morgantown, WV, October 4, 2000.
- 2000 Gray, T. A., Michalski, S.R., and Parkinson, J.W. "Re-Mining Coal Preparation Plant Slurry Ponds" presented at the Tailing Dams 2000, Association of State Dam Safety Officials Annual Conference, Las Vegas, NV, March 28-30, 2000.
- 1998 Gray, T. A., Moran, T. C., Broschart, D., and Smith, G. "Injection of Coal Combustion By-Products into the Omega Mine for the Reduction of Acid Mine Drainage." Presented at the Pittsburgh Coal Conference in Pittsburgh, PA, September 15, 1998.



Pennsylvania Department of Environmental Protection

286 Industrial Park Road
Ebensburg, PA 15931-4119

September 3, 2008

Bureau of Abandoned Mine Reclamation

814-472-1800

Tetra Tech NUS, Inc.
661 Andersen Drive
Pittsburgh, PA 15220-2745

Re: Consulting Work

To Whom It May Concern:

This letter is to verify that Thomas Gray, while with his former employer GAI, provided consulting work to PA-DEP, Bureau of Abandoned Mine Reclamation. Most recently, Mr. Gray was involved in a technical evaluation of the potential use of ten mine pools for water storage, with treatment and discharge during low-flow conditions. I was the DEP's project coordinator for this evaluation.

Mr. Gray and his staff were responsive, professional, and completed all work in a timely manner and under budget. All items in the scope of work were fully addressed.

Please contact me at the above phone number if you would like to further discuss this project and Mr. Gray's involvement.

Sincerely,

Pamela J. Milavec, Chief
Environmental Services Section
Cambria Office



MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Anthony G. Brown
Lieutenant Governor

Water Management Administration
Mining Program – Bureau of Mines
160 South Water Street
Frostburg, Maryland 21532

Shari T. Wilson
Secretary

Bob Summers
Deputy Secretary

February 14, 2008

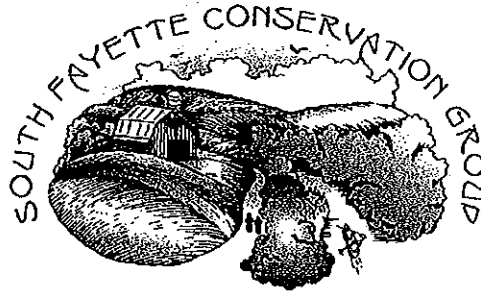
To Whom It May Concern:

I have worked with Mr. Tom Gray since 2002 as the contract monitor for the Maryland Bureau of Mine's technical service contract and the Chief of the Maryland Abandoned Mine Land Program. During that time, Mr. Gray was assigned tasks to perform technical services related to coal mining and coal mine reclamation. In general, the work consisted of geotechnical evaluations, acid mine drainage evaluations, water supply evaluations and acid mine drainage treatment system enhancements.

Mr. Gray's work was always of the highest quality and completed within the assigned time frame. I attribute his success to his experience and ability to understand a wide range of issues. He communicated effectively by providing work updates and was able to resolve a variety of technical and administrative issues before committing time and resources, maximizing the value of his services to the State. I would recommend him to any person or agency considering contracting for his services. If you have any questions, please feel free to contact me at (301)689-1460 or by email at mgarner@allconet.org.

Sincerely,

Michael P. Garner, Chief
Abandoned Mine Land Program
Maryland Bureau of Mines



September 5, 2008

To whom it may concern,

I want to express my appreciation to both Tom Gray and Tetra Tech NUS, Inc. for their ongoing efforts to design an abandoned mine discharge passive treatment system that the South Fayette Conservation Group will be able to submit for Growing Greener funding in 2009. The meeting of August 28th, held to discuss the design of the settlement ponds with Rich Beam of Pa. DEP BAMR, was insightful and informative. As the result of the meeting, a smart strategy has been decided upon for moving forward with this project.

I would recommend both Tom and Tetra Tech to anyone considering undertaking an AMD project. Tom was the designer of our recently completed Fishing Run Restoration/Maude Mine Reclamation Project. The project won the South Fayette Conservation Group a 2008 Western Pa. Environmental Award. The project has also won a 2008 Office of Surface Mining Reclamation Award for the Bureau of Abandoned Mine Reclamation.

Tom and everyone at Tetra Tech is always very responsive to our needs as we tackle permitting issues, adjacent landowner concerns, grant paperwork requests and the coordination of all project partners. Tetra Tech has also been willing to work with us financially in order to help us achieve our required 15% cost match for the grant funds.

As we continue to tackle the problems of abandoned mine drainage within our township, we look forward to maintaining a strong working relationship with Tom and all of the employees at Tetra Tech NUS, Inc.

Sincerely,

Amy Smith
President, South Fayette Conservation Group

Working to conserve, protect and enhance our natural and recreational resources.

515 Millers Run Road, Morgan, PA. 15064



United States Department of the Interior

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

Appalachian Regional Coordinating Center
Three Parkway Center
Pittsburgh, Pennsylvania 15220

May 9, 2003

GAI Consultants, Inc.
Attn: Mr. Thomas A. Gray
570 Beatty Road
Monroeville, PA 15146-1300

RECEIVED

MAY 12 2003

GAI CONSULTANTS INC.
PROJ. NO. _____

Subject: Contract Performance

Dear Mr. Gray:

This letter serves as a recommendation of your corporation for future work. GAI has performed numerous contracts in a highly acceptable manner. You have shown the ability to assign resources in order to concurrently complete multiple contracts without any lose in efficiency and continue to maintain highly professional standards. We appreciate and look forward to working with you in the future.

Sincerely,

Brian J. Luzik
Contracting Officer



EDUCATION: BS, Geological Engineering, Carnegie Mellon University

CERTIFICATIONS/

REGISTRATIONS: Professional Geologist in 12 states including: Virginia, Kentucky, Pennsylvania, Delaware, North Carolina, South Carolina, Florida, Indiana, Illinois, Alabama, California, and Wyoming

PRIOR PROJECT EXPERIENCE:

Geologist; West Virginia Department of Environmental Protection Duck Creek Landslide; Gilmer County, WV. Mr. Gray completed a site investigation, construction cost estimate, specifications and drawings for landslide repair, and construction monitoring.

Geologist; West Virginia Department of Environmental Protection Courtright Highwall Project/Landslide Mitigation; Bridgeport, WV. Completed subsurface investigation, landslide mitigation design and site mapping of an existing landslide, an old landslide and a highwall.

Geologist; Office of Surface Mining; Caldwell Landslide; Middleport, OH. Mr. Gray completed a site investigation, report, construction cost estimate, specifications and drawings for landslide repair, and construction monitoring for this landslide project.

Geologist; American Electric Power Landslide Projects; WV and OH. Mr. Gray served as a landslide expert on a variety of recent landslide projects in West Virginia and Ohio for American Electric Projects including:

- Landslide at Centre Foundry 69 kV Switch, Wheeling, West Virginia
- Amos-Kammer 765 kV Line – Landslide at Structure T89, West Virginia
- Kammer-Dumont 765 kV Line – Landslide Structure 118, Ohio
- Amos North Proctorville 765 kV Line – Structure #2, Lawrence County, Ohio
- Kammer-Dumont 765 kV Line, Tower 10, Monroe County, Ohio

Geologist; West Virginia Department of Environmental Protection Greens Run Highwall; Preston County, WV. Mr. Gray completed a site investigation, construction cost estimate, and specifications and drawings for surface mine reclamation.

Geologist; West Virginia Department of Environmental Protection Omar Refuse Piles; Omar, WV. Developed plans and specifications for reclaiming five unstable coal refuse piles.

Geologist; West Virginia Department of Environmental Protection Vivian Refuse Pile; Vivian, WV. Mr. Gray completed subsurface investigation, surveying and design for reclamation of a large sliding coal refuse pile and two mine entries; plans, specifications, cost estimate, coal refuse reprocessing evaluation, and supporting documents for refuse regrading, surface water control, mine seals and riprap toe protection.



Richard Gray, PG
Project Advisor

Geologist; West Virginia Department of Environmental Protection Bear Run Refuse; Gilmer County, WV. Completed field reconnaissance, developed reclamation options, and collected water quality information to design a wetlands reclamation project; subsurface investigation, surveying, and development of aerial mapping for 160 acres; plans, specifications, cost estimate, reprocessing evaluation and report, and permit application assistance to develop reclamation plan for 13 former coal refuse piles; plan included developing/enhancing wetlands.

Geologist; West Virginia Department of Environmental Protection Kimball Refuse Piles; Kimball, WV. Subsurface investigation, surveying and design for reclamation of 3 coal refuse piles and several mine entries; design included replacement water well and related supply piping for the town of Kimball; preparation of plans, specifications, cost estimate, coal refuse reprocessing report, WV Department of Health permit for new well and other supporting documents for reclaiming this site.

Geologist; West Virginia Department of Environmental Protection Summerlee Refuse; Fayette County, WV. Project included subsurface investigation; surveying; water quality sampling; grading and drainage design for regrading and revegetation of 60 acre refuse pile, two impoundments, and two ponds; preparation of technical specifications, drawings, and engineer's cost estimate; and participation in pre-bid and pre construction meetings.

Contract Manager; Office of Surface Mining Reclamation and Enforcement Contracts. Mr. Gray was the manager of two contracts in which 55 separate studies were conducted on landslides, unstable refuse banks, subsidence, shafts, mine fires, and mine drainage.

Co-Chairman; Second International Symposium on Landslide Control; Tokyo. Following a study of landslides in the Japanese Alps, and while chairman of the U. S. National Committee of the International Society of Soil Mechanics and Foundation Engineering (ISSMFE), Mr. Gray was co-chairman of the main session and presented a paper at this symposium.

Publications: Mr. Gray has authored or co-authored more than ten mining related publications including, "Processes of Colluvial Slope Development, McMechen, WV."

Invited Attendee; Penrose Conference on Landslides; Vail, CO. By invitation limited to 72 experts from North America, Europe, and Asia, he participated in this landslides conference.

Landslide Expert; Japan Society of Landslides Study of Slope Stability Problems; Japan. At the invitation of the Japan Society of Landslides, Mr. Gray participated in a two-week study tour of slope stability problems in Japan.

Advisor; National Initiative for Landslide Hazards Mitigation. Mr. Gray was one of 14 United States landslide consultants invited by the USGS to serve as an advisor to the National Initiative for Landslide Hazards Mitigation.



Roger Blair, PE
Project Engineer

EDUCATION: MA, Public Affairs, Kentucky State University, 1981
BS, Civil Engineering, University of Kentucky, 1965

**CERTIFICATIONS/
REGISTRATIONS:** Professional Engineer; Kentucky; #7175
Professional Engineer; Virginia; #22746

PRIOR PROJECT EXPERIENCE:

Project Manager; Baden Landslide; VA. This project involved providing construction engineering services for remediating a mining-associated slide and a degraded stream.

Project Manager; Bear Branch Landslide; KY. This assignment involved conducting an environmental assessment for an Abandoned Mine Lands project.

Project Manager; Fourseam Landslides Project; KY. Mr. Blair served as the Project Manager for this assignment, which involved conducting an environmental assessment for an Abandoned Mine Lands Project.

Project Manager; Grundy Airport Emergency Landslide Reclamation, VA. Project involved providing design and construction engineering services to stabilize a mining-related landslide.

Project Manager; Highway 80 Landslide; KY. Mr. Blair served as the Project Manager for this assignment, which involved conducting an environmental assessment for an Abandoned Mine Lands Project.

Project Manager; Holbrook Landslide; VA. This project involved providing construction engineering services for remediating and stabilizing a large, exposed coal refuse pile.

Project Manager; Hunts Fork Emergency Landslide Reclamation Project; VA. This project involved providing design and construction engineering services for a gabion wall retaining structure needed to stabilize a mining-related landslide.

Project Manager; Lower Kings Creek Project; KY. Provided construction engineering services for remediating a mining-associated slide and a degraded stream.

Project Manager; Kincer Slide, KY. This project involved providing design and construction engineering services for a gabion wall retaining structure needed to stabilize a mining-related landslide in Knott County, Kentucky.

Project Manager; Linden Slide; Knott County, KY. This project involved providing design and construction engineering services for a gabion wall retaining structure needed to stabilize a mining-related landslide in Knott County, Kentucky.



Roger Blair, PE
Project Engineer

Project Manager; New Circle Coal Landslide, Pike County, KY. This project involved providing construction engineering services for this mining-associated slide in Pike County, KY.

Project Manager; Mantney Landslide; VA. Mr. Blair served as the Project Manager for this project, which involved providing design and construction engineering services to remove two on-bench ponds and stabilize a mining-related slide.

Project Manager; Merriks Landslide; VA. This project involved providing construction engineering services for remediating and stabilizing a large, exposed coal refuse pile.

Project Manager; Muncie Landslide; KY. Mr. Blair served as the Project Manager for this assignment, which involved conducting an environmental assessment for an Abandoned Mine Lands Project.

Project Manager; Norton Landslide; VA. This project involved providing construction engineering services for remediating and stabilizing a large mining-related slide.

Project Manager; Preston Landslide; KY. Mr. Blair served as the Project Manager for this assignment, which involved conducting an environmental assessment for an Abandoned Mine Lands Project.

Project Manager; Reeds Creek Landslide; VA. Provided design and construction engineering services for a gabion wall retaining structure needed to stabilize a mining-related landslide.

Project Manager; Wilhoit Landslide; KY. Mr. Blair served as the Project Manager for this assignment, which involved conducting an environmental assessment for an Abandoned Mine Lands Project.

Project Manager and Senior Engineer; Kentucky Division of Abandoned Mine Lands Letcher County Stream Restoration Project; Letcher County, KY. Mr. Blair managed this stream restoration project in Letcher County, Kentucky.

Project Manager and Senior Engineer; Virginia Division of Mine Land Reclamation; Lee County, VA. Mr. Blair managed this stream restoration project in Lee County, Virginia.

Project Manager and Senior Engineer; Virginia Division of Mine Land Reclamation; Wise and Dickenson Counties, VA. Mr. Blair managed this stream restoration project in Wise and Dickenson Counties in Virginia.



Herb Lemaster, PE

Project Engineer

EDUCATION: MS, Civil Engineering; University of Kentucky; 1992
BS, Civil Engineering; University of Kentucky; 1990

**CERTIFICATIONS/
REGISTRATIONS:** Professional Engineer; Kentucky; #19309
Land Surveyor-in-Training; #1232

PRIOR PROJECT EXPERIENCE:

Project Engineer; Grundy Airport Emergency Landslide Stabilization; VA. This project involved providing design and construction engineering services to stabilize a mining-related landslide.

Project Engineer; Hunts Fork Emergency Landslide Reclamation; VA. This project involved providing design and construction engineering services for a gabion wall retaining structure needed to stabilize a mining-related landslide.

Project Engineer; Kincer Landslide; Knott County, KY. This project involved providing design and construction engineering services for a gabion wall retaining structure needed to stabilize a mining-related landslide in Knott County, Kentucky.

Project Engineer; Lower Kings Creek Landslide; KY. This project involved providing construction engineering services for remediating a mining-associated slide and a degraded stream.

Project Engineer; Merricks Landslide Reclamation; VA. This project involved providing construction engineering services for remediating and stabilizing a large, exposed coal refuse pile.

Project Manager; Muncie Landslide; KY. Mr. Lemaster served as a Project Engineer for this assignment, which involved conducting an environmental assessment for an Abandoned Mine Lands Project.

Project Engineer; Mills Branch AML Project; KY. Mr. Lemaster served as a Project Engineer for this assignment, which involved conducting an environmental assessment for an Abandoned Mine Lands Project.

Project Engineer; Chopping Branch Stream Restoration; KY. This project involved providing construction engineering services for remediating a mining-associated slide and a degraded stream.



David Hallman, PE, PG
Project Engineer

EDUCATION: BS, Geological Engineering; Colorado School of Mines; 1983

**CERTIFICATIONS/
REGISTRATIONS:**

Professional Engineer; Missouri; E-26685
Professional Engineer; Colorado; 26076
Professional Engineer; Texas; 90421
Professional Engineer; Idaho; 8350
Professional Engineer; Wyoming; PE-9495
Professional Engineer; Alaska; CE-8086
Professional Geologist; PG-3536

PRIOR PROJECT EXPERIENCE:

Geotechnical Engineer; Cerro Mojon Project Landslide Back Analysis; La Libertad, Nicaragua. As Geotechnical Engineer, performed back analysis of an active landslide in residual laterite soils. Evaluated effectiveness of potential remedial measures to control ground movements and reconfiguration of the project facilities.

Technical Specialist; Sunrise Mine Subsidence Potential/Landslide Assessment Reclamation Measure Evaluations; Guernsey, WY. Technical Specialist responsible for evaluation of subsidence potential and reclamation measures of large subsidence features associated with block caving practices at this historic iron mine. Assessed landslide-induced wave action associated with potential failure of a large open pit filled with water. Developed automated slope monitoring system to provide warning of impending failure(s) to protect potential downstream inundation zones.

Project Manager; Thunder Mountain Project/Facility Development Within Limits of Large Landslide; ID. Facility development within the limits of a large historic landslide developed in residual soils and weathered tuffaceous bedrock of the Challis Formation. Geotechnical design included detailed back analysis of the landslide and comparison to conditions elsewhere at the site and proposed project development plans. Analyses included assessment of access road and blasting operation vibrations on landslide stability and two-dimensional finite difference consolidation analyses to evaluate development and dissipation of excess pore pressures in the foundation materials during and following construction of the project facilities.

Field Manager; Trans Alaska Gas System Foundation/Rock Slope Stability Evaluation and Landslide Hazard Mapping; Valdez, AK. Field Manager for geotechnical evaluation of the foundation and rock slope stability for the marine terminal and natural gas liquefaction facilities at Port Valdez and rock slope evaluation for the Keystone Canyon segment of the pipeline route. Involved helicopter-supported, oriented core drilling, instrumentation, and detailed outcrop mapping. Duties included landslide hazard mapping and preparation of site conditions and engineering recommendations reports.



Biff D. Cummings, PE
Project Engineer

EDUCATION: BS, Civil Engineering, The Pennsylvania State University, 1978

**CERTIFICATIONS/
REGISTRATIONS:**

Professional Engineer, West Virginia, 015871, 2004
Professional Engineer, Pennsylvania, PE 033238 E, 1984
Professional Engineer, Ohio, E-57675, 1994
Professional Engineer, Indiana, PE 10403586, 2004
Professional Engineer, Illinois, 062.059306, 2006
Professional Engineer, Alabama, 21197-E, 2005

PRIOR PROJECT EXPERIENCE:

Project Manager; AEP Southern Ohio Coal Company Barnes Mine/Landslide Litigation; Fairmont, WV. Managed this landslide/mine subsidence litigation case. It was contended by a homeowner that mine subsidence led to a landslide that was damaging his home and the coal company hired ICF Kaiser to support its defense. Mr. Cummings developed plans for the installation of slope monitors, supervised long-term data collection, analyzed data, evaluated seasonal hydrogeologic conditions, and provided documentation for use in court to defend the coal company.

Project Engineer; Virginia Department of Mine Lands and Reclamation Projects; VA. Mr. Cummings served as a Project Engineer on a variety of reclamation projects for the Commonwealth of Virginia, providing gob pile reclamation, geotechnical, mine seal, and design services. His projects for the Virginia DMLR included the Clifton Reclamation project, Little Short Creek Reclamation project, Robin Coal Reclamation project.

Project Manager; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Tunnelton and Weston Drainage Improvements and Wet Mine Seals; Lewis and Preston Counties, WV. Project Manager for the preparation of construction drawings to install wet mine seals and drainage improvements for the closure of abandoned mine portals on private property in Weston and Tunnelton West Virginia. Prepared construction specifications and construction cost estimate for the closure of nine mine portals.

Project Manager/Senior Engineer; Parkway Center Mall Foundation Rehabilitation; Pittsburgh, PA. Managed the investigation, design, and construction program for the rehabilitation of the foundation system of this \$30 million shopping mall including deep mine grouting. The mall was settling leading to severe structural damage due to differential settlement and subsidence. For this project, Mr. Cummings developed subsurface exploration plans, analyzed the data obtained, designed methods to support the mall without restricting business operations, and managed construction oversight of the foundation correction methods.



Matthew D. Furniss, EIT
Project Engineer

EDUCATION: MS, Mining and Minerals Engineering, Virginia Tech, 2009
BS, Mining and Minerals Engineering, Virginia Tech, 2007

**CERTIFICATIONS/
REGISTRATIONS:** Engineer-In-Training, 2007

PRIOR PROJECT EXPERIENCE:

Project Engineer; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Fisher Run Portal Closure; Weston, WV. Lead Design Engineer for the investigation and design for the closure of seven mine portals on private property. Prepared construction specifications and construction cost estimate.

Project Engineer; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Tunnelton Mine Portal Closure Design for Acid Mine Drainage; Tunnelton, WV. Lead Design Engineer for the investigation and design for the closure of two mine portals on separate property parcels. Prepared construction specifications and construction cost estimate.

Project Engineer; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Paint Branch Mine Project; Kanawha, WV. Final preparation of construction drawings and specifications to install splash pads and metal bat gates on three abandoned mine portals and to remove approximately 48 abandoned bridge piers in Paint Branch.

Project Engineer; Indiana County Conservation District Bear Run Phase II Acid Mine Drainage (AMD) Passive Treatment System. Design of a passive AMD treatment system (launder weir channel, two wetlands, and a pond). Preparation of construction drawings, specifications, and cost estimate.

Project Engineer; South Fayette Conservation Group Gladden Mine Discharge Passive Treatment System (in association with PADEP); South Fayette Township, PA. Assisted with final report on the background, new conceptual design, and final design of the passive treatment system design for the Gladden Mine Discharge. Cost estimate and final construction specifications were prepared.

Project Engineer; South Fayette Conservation Group Fishing Run Stream Sealing (in association with PADEP); South Fayette Township, PA. Investigation of potential stream flows into the Gladden Mine. Identification of four stream channels losing flow through seep and apparent sinkhole subsidence events. Preparation of surface/mine map overlays.



EDUCATION: AAS, Johnson College, 2004

PRIOR PROJECT EXPERIENCE:

CAD Designer; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Fisher Run Portal Closure; Weston WV. Mr. Hoppe's responsibilities included creating existing conditions plans and sections along with mine void information to adequately design structures to seal mine and convey mine water discharge. Also performed design of multiple piping and ditch conveyance systems to allow mine water to discharge to existing streams.

CAD Designer; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Tunnelton Mine Portal Closure Design for Acid Mine Drainage; Tunnelton, WV. Mr. Hoppe's responsibilities included creating existing conditions plans and sections along with mine void information to adequately design structures to seal mine and convey mine water discharge. Also performed design of multiple piping and ditch conveyance systems to allow mine water to discharge to existing streams.

CAD Designer; West Virginia Department of Environmental Protection, Office of Abandoned Mine Lands and Reclamation Paint Branch Mine Project; Kanawha, WV. Mr. Hoppe performed design services on this project, which included the installation splash pads and metal bat gates on three abandoned mine portals and removal approximately 48 abandoned bridge piers in Paint Branch.

CAD Designer; South Fayette Conservation Group Gladden Mine Discharge Passive Treatment System (in association with PADEP); South Fayette Township, PA. Design required creation of existing conditions plans and sections along with design of 2 ½ acre pond separated into 3 chambers using earthen berms. Pond required berm with graded access road into pond area and along perimeter. Sections and profiles were created along pond and access road. Access road required horizontal and vertical geometry to be included on plan and profiles.

CAD Designer; East Monongahela Sportsman's Club, Erosion and Sediment Pollution Control Plan; Elizabeth, PA. Responsibilities included creating existing contours and existing site plan from information provided by surveyor. Design of proposed grading plan including sections, volume calculations and erosion and sediment pollution control measures.

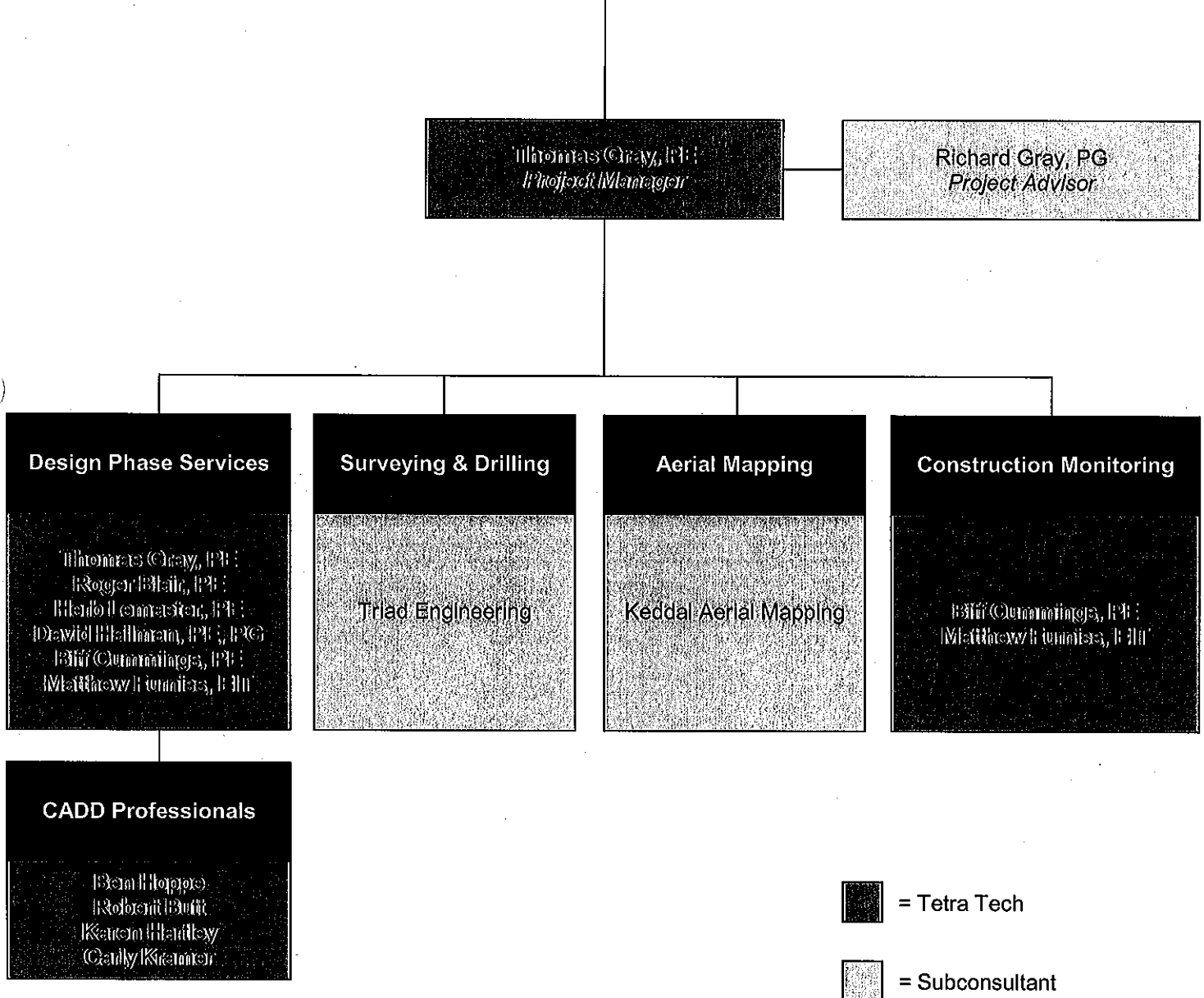
CAD Designer; Big Boulder Subdivisions; PA. Responsibilities included roadway layout and grading including profiles and cross-sections, lot layout adhering to county ordinances for sizing, and layout of pressurized water system for three 50 acre subdivisions. Also involved in storm water design and erosion & sedimentation control measures. Calculated all earthwork and material quantities and was responsible for quality control on Final drawing packages of up to 35 drawings each.



CLARKSBURG (LYONS) LS DESIGN

West Virginia Department of Environmental Protection

ORGANIZATION CHART



Project Descriptions

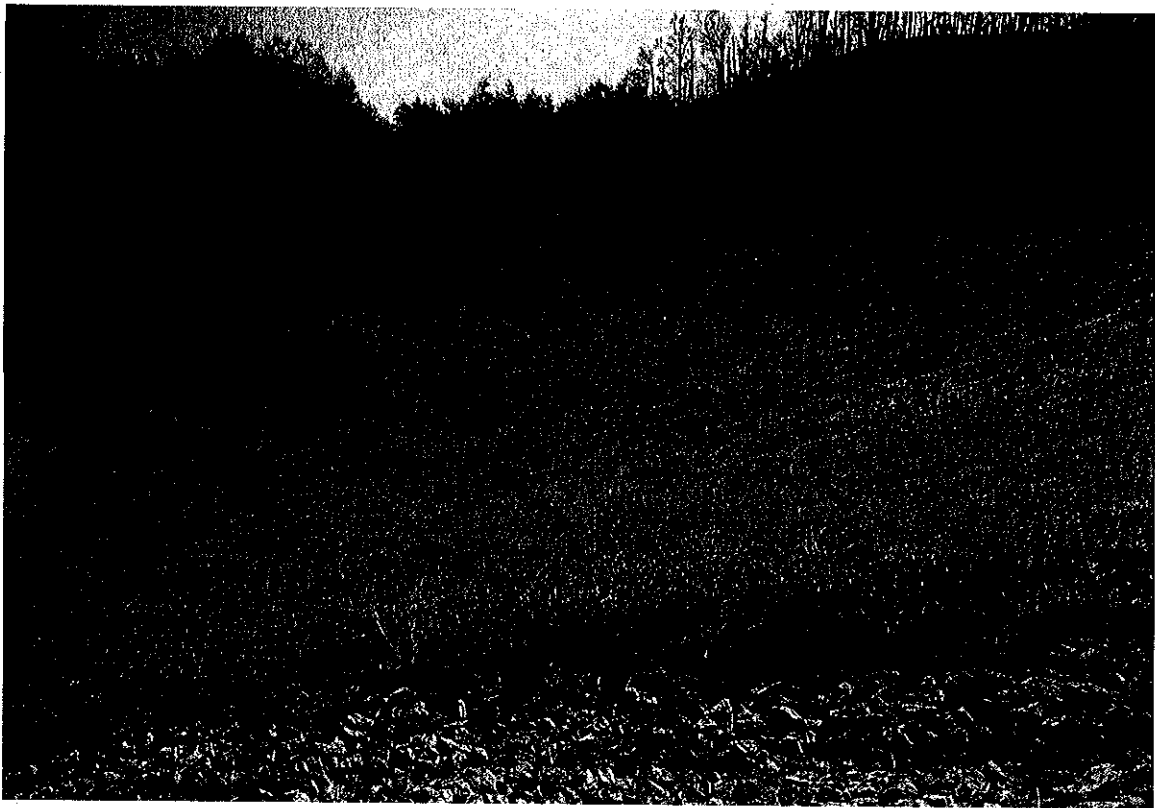
KENTUCKY DIVISION OF AML LOWER KINGS CREEK MINING-RELATED LANDSLIDES

Tetra Tech provided consulting engineering service for stabilizing the mining-related landslides that were threatening nearby residences and that had impacted an intermittent stream. Besides the imminent threat posed by the landslides, water was impounded on the bench, causing further weakening of the land mass, and sediment from the slide had been deposited along about 900 linear feet of stream.

Detailed drawings, construction details, and specifications were prepared to fully describe the construction requirements. In addition, an engineering report and a cost estimate were prepared. The major components of the remedial design included de-watering the bench, unloading and re-grading the slides, placing excess spoil in a new hollow fill, and developing the specifics for restoring the sediment-laden stream.

Other elements of the work included a geotechnical investigation to evaluate the depth and character of earthen material, to locate the rock line, to identify groundwater levels, and to provide samples for engineering analysis.

The project culminated with the production of detailed technical specifications and construction drawings suitable for bidding the project.

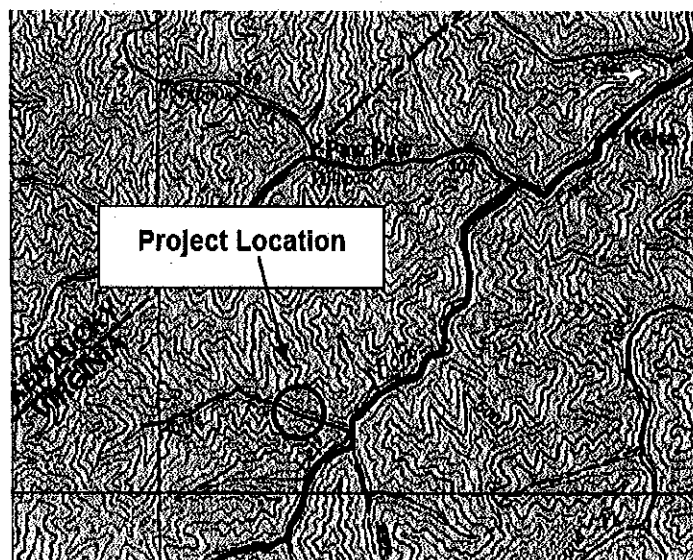


VIRGINIA DIVISION OF MINED RECLAMATION HUNT'S FORK EMERGENCY LANDSLIDE DESIGN

Tetra Tech provided engineering services for the reclamation of a landslide that was threatening a nearby residence. Detailed drawings, construction details, and specifications were prepared to fully describe the construction requirements. Also prepared were an engineering report and cost estimate for construction the project. The major components of the final reclamation design consisted of two gabion buttresses, a subdrain system, removal of excessive overburden material, and regrading the surface.

Drawings included the existing conditions map, site plan, boring records, miscellaneous details, gabion buttress profiles, and cross-sections of the slide area. The miscellaneous details showed various components of the construction including the subdrain installation, gabion wall construction, stormdrain installation, safety barricades, and sediment and erosion controls. Surveying for the project included a detailed topographic survey of the site to show contours at two-foot intervals; locations of existing structures such as residences, roadways, cemetery, and drainage features; the extent of the existing slide area; control points set for use during the construction phase; baselines for construction layout, including horizontal and vertical control; and a property map that showed all surface and mineral owners for lands affected by the project.

A geotechnical investigation was performed to evaluate the depth and character of earthen material, locate the rock line, identify groundwater levels, and provide samples for engineering analyses. Specifications included special products required in the work; material quality requirements; construction methods; the recommended order of work and the recommended installation or construction techniques; a bid package that included bid items, estimated quantities, and the units for measurement and payment.



VIRGINIA DIVISION OF MINED RECLAMATION

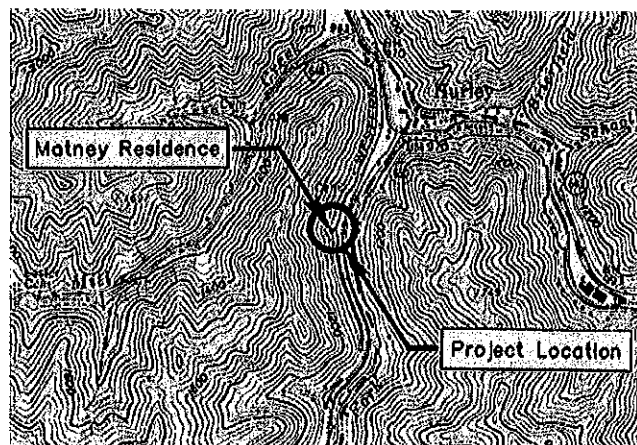
MANTNEY LANDSLIDE RECLAMATION DESIGN

Tetra Tech provided consulting engineering services for the reclamation of a landslide that was threatening a nearby residence. Detailed drawings, construction details, and specifications were prepared to fully describe the construction requirements. Also prepared were an engineering report and cost estimate for construction. The major components of the final reclamation design consisted of a reinforced concrete retaining wall, a guardrail slope stabilization system, subdrain system, removal of excessive overburden material, mine adit closure, and regrading the surface.

Drawings included the existing conditions map, site plan, boring records, retaining wall plan and elevations, miscellaneous details, and cross sections of the slide area. The miscellaneous details showed various components of the construction project including the subdrain installation, polyethylene pipe installation, culvert installation, safety barricaded installation, mine adit closure details, slope reinforcement with steel beam guardrails, retaining wall backfill installation, and sediment and erosion control details.

Surveying for the project included a detailed topographic survey of the site showing contours at 2-foot intervals; locations of existing structures such as residences, roadways, cemeteries, and drainage features; the extent of the existing slide area; mine adit locations; control points set for use during the construction phase; baselines for construction layout, including horizontal and vertical control; and a property map that showed all surface and mineral owners for lands affected by the project.

A geotechnical investigation was performed to evaluate the depth and character of earthen material, locate the rock line, identify groundwater levels, and provide samples for engineering analyses. Specifications included special products required in the work; material quality requirements; construction methods; the recommended order of work and the recommended installation or construction techniques; a bid package that included bid items, estimated quantities, and the units for measurement and payment.



WVDEP TIBBS RUN (PERINE) LANDSLIDE REMEDIATION PROJECT

(A Triad Engineering Project)

The Tibbs Run landslide encompassed approximately one-half acre, with the head of the slide located within thirty (30) feet of a residence. The problem area was located within a prior WVDEP AML project that was reclaimed in 2002.

The landslide had destabilized the fill area downslope of the residence and driveway. The slip impacted the septic tank and sewer lines as well as various storm drain lines. In addition, the private roadway located immediately upslope of the landslide toe was severely impacted. The remedial design focused on regrading to remove the slip plane, redirecting stormwater and groundwater seepage flows and constructing two (2) gabion walls to provide long-term stability to the site. Utilities, including the septic tank, sewer and storm lines and gas lines, had to be relocated to accommodate the planned construction. In addition, portions of the private roadway had to be reconstructed.

Drilling was required to accurately define the extent of the fill soils at the site and to locate the top of bedrock. The dip of the bedrock necessitated stepping of the gabion walls to provide a competent (bedrock) bearing surface. A combination erosion control matted (ECM) v-ditch and underdrain was designed for the base of the hillside upslope of the slip to control and direct surface and subsurface water away from the regraded hillside. The majority of the surface water was conveyed in ECM open channels to minimize costs associated with culverts. Approximately one acre was revegetated following completion of construction.

The construction cost of the project was approximately \$550,000, with Triad receiving approximately \$23,000 for the design work.